



AS-Interface safety module

VAA-2E2A-G12-SAJ/EA2L

- Switchable internal logic operation of the inputs and outputs via parameter bit
- One-piece housing with stainless steel base
- Installation without tools
- Metal threaded inserts with SPEEDCON technology
- Flat cable connection with cable piercing technique, variable flat cable guide
- Red LED per channel, lights up in the event of output overload
- Communication monitoring, configurable
- 2 safe inputs for mechanical contacts such as EMERGENCY-STOP switch
- DIN rail mounting
- AS-Interface certificate

G12 safety module, 2 safety inputs and 2 standard electronic outputs



Function

The VAA-2E2A-G12-SAJ/EA2L is an AS-Interface safety module with 2 safety-related inputs and 2 conventional outputs. A two-channel mechanical switch on both of the safety - related inputs or a one-channel mechanical switch on each one can be connected. The outputs are conventional electronic outputs which can be energized with a total of 4 A (max. 2A per output).

The solid housing permits fast mounting without tools as well as easy removal without tools. The stainless steel shell and the cast housing ensure durability and a high protection category.

The connection to the AS interface cable is achieved via penetration technology in the integrated flat cable. The insert for the flat cables can be turned in two orientations.

All connections to inputs are implemented via metal inserts for high stability. The connection to the sensors is achieved via a M12 x 1 circular connector with SPEEDCON quick locking option.

To indicate the current switching state there is an LED for each channel fitted to the top of the module. An LED for monitoring the AS interface communication and for displaying that the module has the address 0 is also available. For communication errors the power is switched off the outputs (only for P1=1).

According to approval the module can be used up to category 4/PL e as per ISO 13849-1, SIL 3 as per EN/IEC 61508 with the use of both input channels.

When using two one-channel switches the module can be used up to category 2/PL c as per ISO 13849-1, SIL 2 as per EN/IEC 61508.

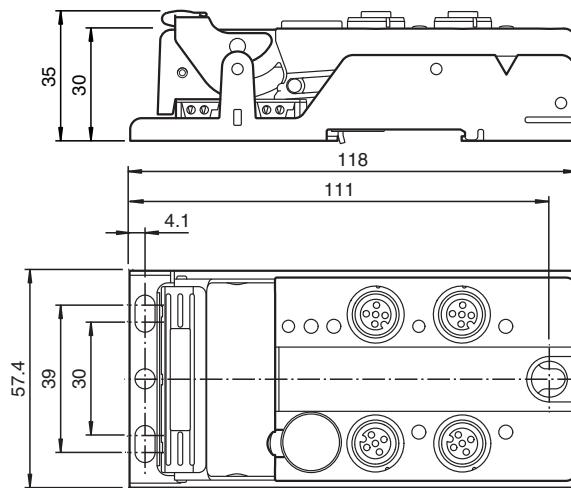
Both channels of the mechanical switch are monitored for cross connection. One LED shows the voltage of the AS-Interface and another the external voltage supply.

Application

The cables and the laying of the cables have to meet the standards which apply to the particular application, e.g. IEC 60204. The instructions for the intended use, the selection and the correct connection of the sensors/actuators or the selection and the attainment of the corresponding safety category are given in the manual.

The outputs may not be used for safety-related functions!

Dimensions



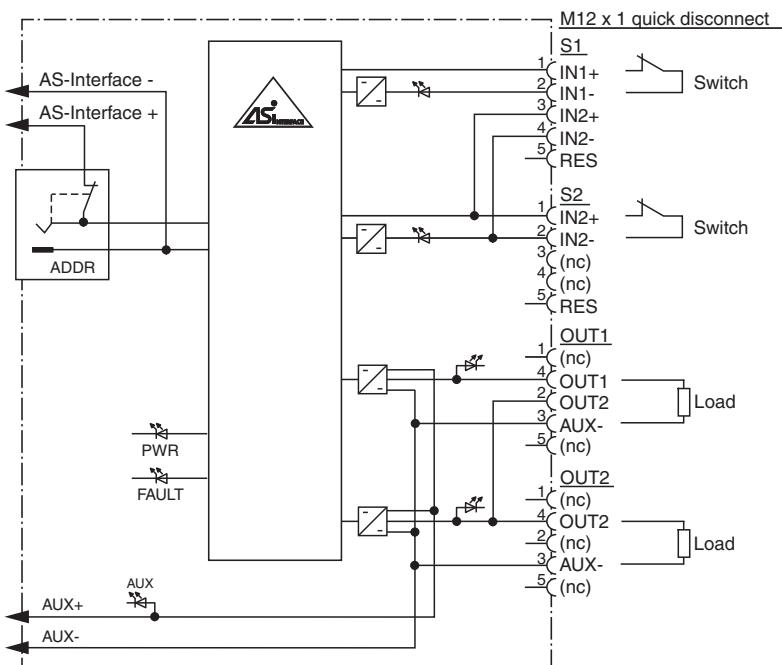
Technical Data

General specifications		
Node type	Safety node	
AS-Interface specification	V3.0	
Required gateway specification	≥ V2.1	
Profile	S-7.B	
IO code	7	
ID code	B	
ID1 code	F	
ID2 code	0	
UL File Number	E223772	
Functional safety related parameters		
Safety Integrity Level (SIL)	SIL 3	
Performance level (PL)	PL e	
Category	Cat. 4	
MTTF _d	no significant contribution to MTTFd of the overall system	
PFH _d	no significant contribution to PFH of the overall system	
PFD	no significant contribution to PFD of the overall system	
Indicators/operating means		
LED FAULT	error display; LED red red: communication error or address is 0 red flashing: Output supply overload	
LED PWR	AS-Interface voltage; green LED green: voltage OK flashing green: address 0	
LED AUX	ext. auxiliary voltage U _{AUX} ; dual LED green/red green: voltage OK red: reverse voltage	
LED IN	switching state (input); 2 LED yellow	
LED OUT	Switching status (output); 2 yellow/red LEDs Yellow: output active Red: output overload	
Electrical specifications		
Auxiliary voltage (output)	U _{AUX}	24 V DC ± 15 % PELV
Rated operating voltage	U _e	26.5 ... 31.6 V from AS-Interface
Rated operating current	I _e	≤ 50 mA
Protection class	III	
Surge protection	U _{AUX} , U _{in} : Over voltage category III, safe isolated power supplies (PELV) derived from mains up to 300 V AC line-to-neutral	
Rated insulation voltage	40 V	
Pulse withstand voltage	0.5 kV	
Input		
Number/Type	2 safety-related inputs for mechanical contacts, crossed-circuit monitored: 2 single-channel contacts: up to category 2/PL c to ISO 13849-1 or 1 2-channel contact: up to category 4/PL e to ISO 13849-1 Cable length must not exceed 300 m per input.	
Supply	from AS-Interface	
Voltage	20 ... 30 V DC pulsed	
Current loading capacity	input current limited ≤ 15 mA, overload and short-circuit resistant	
Output		
Number/Type	2 conventional electronic outputs, PNP	
Supply	from external auxiliary voltage U _{AUX}	
Voltage	≥ (U _{AUX} - 0.5 V)	
Current	1.5 A per output, short-circuit protected	
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU	EN 62026-2:2013+A1:2019 IEC 60947-5-3:1999	

Technical Data

Machinery Directive	Directive 2006/42/EC	EN ISO 13849-1:2008 + AC:2009 EN ISO 13849-2:2012 EN 62061:2005
Standard conformity		
Insulation coordination	EN 60947-1:2007	
Degree of protection	EN 60529:2000	
Fieldbus standard	EN 62026-2:2013	
Electrical safety	IEC 60947-1, NFPA 79, IEC 60204-1:2007	
Emitted interference	EN 61000-6-4:2007/A1:2011	
AS-Interface	EN 62026-2:2013+A1:2019	
Noise immunity	IEC 62026-2:2008 EN 62061:2005 EN 61000-6-2:2005	
Functional safety	ISO 13849-1 (up to category 4/PL e), IEC 61508/IEC 62061 (up to SIL3)	
Standards	NFPA 79:2007 ER 1	
Ambient conditions		
Ambient temperature	-25 ... 60 °C (-13 ... 140 °F)	
Storage temperature	-25 ... 85 °C (-13 ... 185 °F)	
Relative humidity	85 %, noncondensing	
Climatic conditions	For indoor use only	
Altitude	≤ 2000 m above MSL	
Shock and impact resistance	30 g, 11 ms in 6 spatial directions 3 shocks 10 g, 16 ms in 6 spatial directions 1000 shocks	
Vibration resistance	0.75 mm 10 ... 57 Hz, 5 g 57 ... 150 Hz, 20 cycles	
Pollution degree	3	
Mechanical specifications		
Degree of protection	IP67	
Connection	Cable piercing method flat cable yellow/flat cable black inputs/outputs: M12 round connector	
Material		
Housing	PBT	
Mass	200 g	
Tightening torque, cable gland	0.4 Nm	
Mounting	Mounting plate	

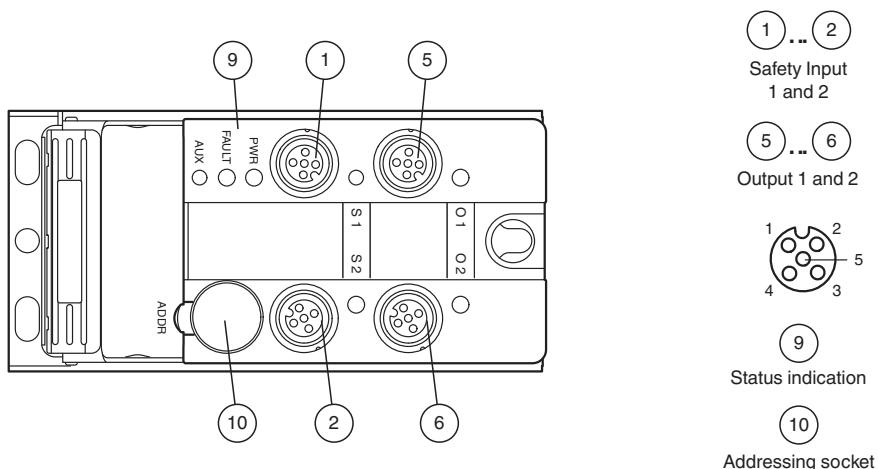
Connection



Connection

Do not connect inputs and outputs, which are supplied via the module from AS-interface or via auxiliary power, with power supply and signal circuits with external potentials.

Assembly



Programming

Data bit safety node
(function via AS-Interface)

Data bit	Input	Output
D0	dyn. safety code 1	OUT1
D1	dyn. safety code 1	OUT2
D2	dyn. safety code 2	-
D3	dyn. safety code 2	-

Parameter bits
(programmable via AS-Interface)

Programming

Parameter bit	Function
P0	Communication monitoring P0=0 monitoring off, the outputs maintain the status if communication fails P0=1 monitoring on, if communication fails, the outputs are deenergised, default setting
P1	Logic operation P1=0 the outputs are controlled via AS-Interface or the inputs. The corresponding output is activated on opening the contacts of an input P1=1 the outputs are controlled via AS-Interface, default setting
P2	not used
P3	not used

Accessories

	VAZ-V1-B3	Blind plug for M12 sockets
	VBP-HH1-V3.0-KIT	AS-Interface Handheld with accessory
	VAZ-PK-1,5M-V1-G	Adapter cable module/hand-held programming device
	VAZ-CLIP-G12	lock for G12 module